Change in Compensatory Skills in Cognitive Therapy for Depression

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The Ways of Responding (WOR) was developed to assess change in compensatory or metacognitive skills taught by cognitive therapists. Thus, one would expect WOR scores to change during cognitive therapy (CT) and to be associated with change in depression level. Twenty-seven patients with a DSM-III-R diagnosis of major depression who had received CT filled out the WOR and other measures of cognition. After 12 weeks of CT, the patients exhibited change in the WOR, the Attributional Style Questionnaire, the Dysfunctional Attitude Scale, and the Self-Control Scale. Furthermore, there were indications that change in depression was associated with changes in these measures of cognition, including the WOR. The WOR appears to be a sensitive measure of change during CT that covaries with change in depression. It remains to be tested whether change on the WOR is specific to CT.

(The Journal of Psychotherapy Practice and Research 2001; 10:8–13)

The availability of effective drug and nondrug treatments for depression has made it possible to examine specific mechanisms of change that might be crucial ingredients in the antidepressant effect of each modality. Because cognitive therapy[1] (CT) targets cognitive phenomena, a reasonable hypothesis is that treatment with this form of therapy will yield greater changes in at least some cognitive phenomena than are observed in patients treated with antidepressants. This hypothesis, though, has received surprisingly little empirical support. Comparable improvements in depressive cognitions and dysfunctional attitudes have been reported for drug-treated, behaviorally treated, and CT-treated patients.[2–4] These null findings are consistent with Beck's[5] hypothesis that any effective treatment for depression will alleviate cognitive symptoms, inasmuch as cognition is simply a component of a psychobiological system.

There remain reasons, however, to continue the search for specific effects of cognitive therapy on cognition. Findings that CT confers protection against relapse relative to equally effective short-term drug treatments[6–9] suggest that differences of some kind

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should exist between drug-treated and CT-treated patients at the end of treatment. In addition, Hollon et al.[10] did find significantly greater improvement in scores on the Attributional Style Questionnaire (ASQ)[11,12] for patients who improved in cognitive therapy relative to patients who improved in drug therapy. In that same study, pre- to mid-treatment change on cognitive measures (the ASQ, the Dysfunctional Attitude Scale,[13] and the Hopelessness Scale[14]) predicted remission of depression for patients treated with cognitive therapy, but not for those treated with drugs.[15] These findings suggest a potentially critical role for cognitive change in cognitive therapy.

Barber and DeRubeis[16] have argued that one possible reason for the paucity of evidence for cognitive specificity is that researchers have focused primarily on measures of underlying beliefs or schemata while neglecting other potentially important mechanisms of change, such as the acquisition of compensatory or cognitive coping skills to deal with distressing events and thoughts. Among the compensatory skills taught by cognitive therapists, we included the generation of explanations and alternative explanations for upsetting events and thoughts, the questioning of implications, and the generation of concrete problem-solving plans to resolve difficult situations. We developed an open-ended thought-listing instrument, the Ways of Responding questionnaire, to measure these compensatory skills.[17]

The current study was designed to be a first step in examining whether cognitive skills are acquired as a result of cognitive therapy. In addition, we examined whether change in cognitive skills, as well as other measures of cognition, covaried with change in depression. To accomplish this, we undertook a comparison of several measures of cognition in a group of depressed, nonbipolar, nonpsychotic outpatients who had applied for treatment at a major center for CT. Thus, in the present study we intended to examine to what degree various cognitive phenomena—compensatory skills, explanatory style, dysfunctional attitudes, and hopelessness—change during 12 weeks of treatment, and to assess the covariation of change on these measures with change in depression.

METHODS

Subjects

Twenty-seven patients (20 women; mean age 39.4 years) who came for treatment at a center for cognitive therapy received a diagnosis of major depression by use of the Structured Clinical Interview for DSM-III-R[18] administered by experienced diagnosticians. No formal diagnostic reliability was estimated. Exclusion criteria were a Beck Depression Inventory[19] score of less than 16, a concurrent psychotic diagnosis such as schizophrenia or bipolar disorder, evidence of brain impairment, and recent drug or alcohol abuse or dependency. Patients younger than 18 or older than 65 were also excluded.

Measures

The following measures were used:

The Attributional Style Questionnaire (ASQ),[11] a self-report measure of attributional or explanatory style for good and bad events. Three causal dimensions—internality, stability, and globality—are rated on seven-point scales for six good and six bad events. Reported reliabilities for the individual dimensions achieved a mean of 0.54 and ranged from 0.44 to 0.69.[12] Two summary scores, composite positive (ASQ Pos) and composite negative (ASQ Neg), can be obtained by averaging all three dimensions for the six good and the six bad events. Reliability coefficients of 0.75 and 0.72 have been reported for ASQ Pos and ASQ Neg, respectively.[12] A total score (ASQ Total) is obtained by subtracting ASQ Neg from ASQ Pos. In the following analyses, only the ASQ Total and ASQ Neg scores are presented, since they have been repeatedly found to be the most meaningful scores.[20]

The Beck Depression Inventory (BDI),[19] a 21-item self report measure of depression. It is a widely used, reliable measure of depressive symptoms.

The Dysfunctional Attitude Scale (DAS),[13] a self-report of dysfunctional attitudes considered to put their holders at risk for depression. Subjects read 100 items such as "If I fail at my work, then I am a failure as a person" and are asked to indicate their agreement on a seven-point scale.

The Rosenbaum Self Control Scale (SCS),[21] a self-report measure of "learned resourcefulness." The schedule consists of 36 items rated on a six-point scale indicating the extent to which the subjects evaluate the item as characteristic of themselves (e.g, "When I have something to do that is anxiety arousing for me, I try to visualize how I will overcome my anxieties while doing it"). Rosenbaum and Jaffe[22] reported good test-retest reliability after 4 weeks ($r = 0.86$) and good internal con-

sistency computed on six different samples (range 0.78–0.86). This scale was used because validity data have been published showing SCS to be a measure of the capacity of a subject to mitigate the generalization of helplessness from one situation to a variety of others.[22] It has also been shown to predict outcome in CT in one study.[23]

The Ways of Responding (WOR),[17] a thought-listing procedure. The WOR includes eight different stories in each of two forms. Subjects are asked to imagine themselves in various situations and to tell what they would think and do in such situations. Patients, at intake, randomly received either Form A or Form B and were given the alternate form 12 weeks later. The scores derived from the WOR that reflect the level of compensatory skills demonstrated by the patient are summed as WOR Total and represent the number of times a subject used a response type that would be encouraged by cognitive therapists (WOR Positive) less the number of times the subject listed depressotypic kinds of statements (WOR Negative). A third category at this level of analysis, WOR Neutral, which reflects responses that fit into neither WOR Positive nor WOR Negative, will not be used in substantive analyses. Barber and DeRubeis[17] reported that in a student sample, the kappa between two raters for the WOR categories was 0.85, and intraclass correlation coefficients reflecting interrater reliability for the WOR scores ranged from 0.94 to 0.97. The median alternate form reliability was 0.76; the median coefficient alpha was 0.73.

Procedure

Patients filled out the questionnaires both at intake and after 12 weeks of treatment as part of the regular intake and 12-week evaluation. They did not necessarily terminate treatment at that time; most courses of therapy in the clinic were open-ended. These patients, for the most part, were treated by fellows in cognitive therapy and were not assigned to any specific research project. The therapists were receiving ongoing supervision for their cases and were in advanced training to become cognitive therapists. The patients were given the WOR, DAS, SCS, and BDI as part of the regular test battery given to any patient attending the Center. The ASQ was not part of the assessment battery at the beginning of data collection for this study and was therefore given only to a subset of 12 patients. As noted above, patients at intake randomly received either Form A or Form B from the WOR, and they were given the alternate form 12 weeks later.

RESULTS

Because we had missing data at intake for some of the patients, we imputed intake data for each specific measure, using regression analyses that exploited the available data, with BDI as the predictor. We decided that imputing intake data was preferable to the other options: excluding patients for whom we did not have specific intake questionnaires or using only 12-week scores for all patients. In this way, intake WOR scores were estimated for 6 patients (for a total of 27 patients), ASQ scores for 1 (for a total of 12 patients), DAS scores for 2, and SCS scores for 3. We computed all analyses with and without the patients for whom we needed to impute intake data, and the pattern of results was similar with this subset of patients. Thus, in order to simplify data presentation, for the most part we will present only the analyses that use imputed data.

Interrater Reliability

Intraclass correlations for three judges pooled for the WOR Total and WOR Positive scores for Form A or B ranged from 0.91 to 0.98. The scores used for computing these coefficients are the averages across the eight stories. The intraclass correlations remained virtually unchanged when the SAS Varcomp Maximum Likelihood[24] method of estimating the component variances was used instead of SAS GLM.

Summary Statistics at Intake

As previously described, three self-report measures (ASQ, DAS, SCS) and one thought-listing questionnaire (WOR) were used to examine whether change in cognitive measures was associated with change in symptoms in CT. Table 1 shows group means and standard deviations at intake and at the 12-week assessment for these measures and the BDI.

Table 2 presents the relationships among the various cognitive and mood measures at intake. All cognitive measures shared some variance among themselves and with concurrent level of depression. For example, the WOR Total scores correlated significantly with the DAS, indicating that the better the patient's compensatory skills, the lower the dysfunctional thinking. The

WOR did not correlate significantly with the SCS in this sample of patients. In addition, because of the small number of patients who filled out the ASQ, the correlations between the WOR and the ASQ, although moderate in magnitude, were not significant. Similarly, the ASQ, like the WOR, did not correlate significantly with the SCS. In contrast to the WOR, the ASQ did not correlate significantly with the DAS in this small sample.

Improvement During Treatment

Depression levels decreased modestly after 12 weeks of CT. Thus, change in the cognitive measures was constrained. Patients improved on the total score of the ASQ (ASQ Total, $t = 4.13$, df = 11, $P < 0.005$) and on the ASQ scores for negative situations (ASQ Neg, $t = 4.49$, df = 11, $P < 0.001$). All WOR scores improved significantly (e.g., WOR Positive, $t = 2.19$, df = 26, $P < 0.05$). As expected, WOR Negative scores diminished significantly from a mean of 2.5 to a mean of 1.7.

Covariation of Cognition and Mood

The next question was whether change in the cognitive measures was associated with symptomatic relief. As can be seen from Table 3, change on the WOR and ASQ scores tended to covary with change in depression. The second column of Table 3 shows the partial correlations for only those patients for whom we have complete data.

DISCUSSION

After 12 weeks of CT, patients became more skillful in employing compensatory skills and displayed a more "optimistic" attributional style for negative events. Patients' levels of compensatory skills, as measured by the

TABLE 1. Descriptive statistics on mood and process measures at intake and at week 12 and significance of change

	Score, Mean ± SD (*n*)			
Measure	**Intake**	**Week 12**	**Effect Size**	***P*<**
Mood measure				
Beck Depression Inventory (BDI)	28.9 ± 7.9	16.2 ± 12.5	1.61	0.001
Ways of Responding (WOR) measures				
Total	0.1 ± 1.4	1.3 ± 2.0	1.04	0.005
Negative	2.5 ± 1.0	1.6 ± 1.1	0.96	0.001
Positive	2.4 ± 0.7	3.0 ± 1.5	0.74	0.05
Attributional Style Questionnaire (ASQ)				
Total	−2.3 ± 3.1 (12)	2.4 ± 3.2	2.04	0.005
Negative	15.5 ± 1.3 (12)	12.5 ± 2.6	3.45	0.001
Other measures				
Dysfunctional Attitude Scale (DAS)	389.8 ± 85.2 (25)	354.2 ± 86.8 (21)	0.46	0.005
Self Control Scale (SCS)	−0.6 ± 21.2 (24)	8.1 ± 29.6 (21)	0.33	

TABLE 2. Correlation between cognitive measures and BDI at intake

	Correlation (*n*)					
	BDI	**WOR Total**	**WOR Positive**	**ASQ Total**	**ASQ Negative**	**SCS**
WOR Total	−0.20					
WOR Positive	−0.47*	0.77				
ASQ Total	−0.32 (12)	0.56# (12)	0.08 (12)			
ASQ Negative	0.53# (12)	−0.42 (12)	−0.28 (12)	−0.75 (12)		
SCS	−0.48* (24)	0.33 (24)	0.28 (24)	0.42 (11)	−0.31 (11)	
DAS	0.57** (25)	−0.63** (25)	−0.63** (25)	−0.31 (11)	0.33 (11)	−0.65** (24)

Note: $n = 27$ except where indicated in parentheses. The significance levels are not presented between measures that are not independent (e.g., WOR Positive and WOR Total). ASQ = Attributional Style Questionnaire; BDI = Beck Depression Inventory; DAS = Dysfunctional Attitude Scale; WOR = Ways of Responding; SCS = Self Control Scale.
#$P < 0.10$; *$P < 0.05$; **$P < 0.01$.

WOR, were improved significantly. These findings are consistent with the hypothesis that compensatory skills, including the metacognitive skills taught by cognitive therapists, are learned and "absorbed" during cognitive therapy. It remains possible that, like many other measures of cognitions posited by cognitive theorists,[16] improvement in compensatory skills is an epiphenomenon of change in depression; in other words, that change in depression is driving the change in compensatory skills. The patients' ability to respond adaptively to negative situations and initial thoughts as measured by the WOR Positive improved significantly; the effect size ($r = 0.74$) was nevertheless smaller than the effect size of change on the ASQ or on the BDI. This smaller increase might indicate that the WOR measure is not very sensitive to change, or that compensatory skills are difficult to learn over a brief period of time, or that the skills were not taught very well. Some of the therapists used in the present study were cognitive therapy fellows in training. It would be interesting in a future study to examine the relationship between the quality of therapists' interventions (a measure of what is delivered to the patient) and change in compensatory skills in patients (a measure of what the patient has absorbed).

The observed change in attributional style is consistent with Jones and co-workers'[25] findings regarding the processes of dynamic and cognitive therapies as examined with the Psychotherapy Process Q-set. One of the differences they uncovered was that cognitive therapists more often helped their patients to "externalize" their self-blame.

Finding covariation between reduction in levels of depression and improved compensatory skills is only the necessary first step in determining the role of the acquisition of compensatory skills as a mechanism of change in CT. In future research it will be necessary to show that change in compensatory skills is specific to CT, relative to other treatments such as pharmacotherapy. It would be of further interest to examine whether the compensatory skills assessed by the WOR are specifically learned in CT but not in other forms of psychotherapy such as dynamic therapy.[26]

Neimeyer and Feixas,[27] using their own measure of skill acquisition, the Thought Record Skills Assessment, found that in a group treated with CT, the amount of skill acquisition was unrelated to outcome but was related to follow-up BDI. Unfortunately, we do not have follow-up data on our treatment groups.

Persons and Miranda[28] argued that one of the reasons for the observed lack of specificity of cognitive measures among patients with remitted depression following cognitive therapy is that most patients fill out the cognitive measures when they are in a good mood. It is therefore conceivable that many patients still possess dysfunctional schemata that are inactive when they take the test. They proposed that one needs to activate schemata by using a mood-induction technique to assess whether CT-treated patients differ from medication-treated patients in dysfunctional attitudes. Segal et al.[29] have reported that depressed patients who had responded to cognitive therapy evidenced fewer dysfunctional attitudes (assessed by the DAS) after experiencing a sad mood induction, relative to patients who had responded to pharmacotherapy. They further observed that performance on the mood-induced DAS predicted resistance to relapse during an extended follow-up. Their study gives preliminary support to Persons and Miranda's claim about the importance of assessing depressed patients' thinking while they are in a sad mood.

It is our impression that the WOR includes such a mood-induction component.[17] The administration of eight stressful scenarios followed by negative thoughts seems likely to induce bad mood, and to some extent the ASQ probably does the same. Because there are no data on the degree of mood induction generated by either the WOR or the ASQ, research to assess the effect of these measures on mood is warranted.

TABLE 3. Partial correlations between the different cognitive measures and BDI at 12 weeks (partialling initial levels)

		Correlation		
Measure (*n*)		For All Patients	Only for Patients With All Data (*n*)	
WOR Total	(27)	−0.54***	−0.61***	(21)
WOR Negative	(27)	0.31	0.34	(21)
WOR Positive	(27)	−0.57***	−0.67***	(21)
ASQ Total	(12)	−0.59#	−0.57	(11)
ASQ Negative	(12)	0.17	0.22	(11)
DAS	(21)	0.67***	0.72***	(16)
SCS	(21)	−0.82***	−0.88***	(16)

Note: ASQ = Attributional Style Questionnaire; BDI = Beck Depression Inventory; DAS = Dysfunctional Attitude Scale; SCS = Self Control Scale; WOR = Ways of Responding.
#$P<0.10$; *$P<0.05$; **$P<0.01$; ***$P<0.005$.

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